

WHAT IS CLAIMED IS:

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1 An active pixel sensor comprising:
at least one pixel comprising a photodetector that
outputs an output level indicative of incoming light;
a sample and hold element electrically connected to the
pixel operating to store said output level during a readout
operation;
an adjusted saturated voltage source, comprising a node
that provides an adjusted saturation voltage; and
a comparator having a first input node operatively
connected to the sample and hold element, a second input node
electrically connected to the adjusted saturation voltage
node, and an output node, said comparator operating to output
a signal indicating whether the adjusted saturation voltage
exceeds the output level from the photodetector.

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2. The active pixel sensor of claim 1 further comprising a
latch including an input node and an output node, said input
node operatively connected to the output node of the
comparator operating to store a saturation flag in response to
the adjusted saturation voltage exceeding the output level
from the photodiode.

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3. The active pixel sensor of claim 2 further comprising a
select transistor operatively connected to the output node of

the latch and operating to enable readout of the saturation flag during a readout operation for the pixel.

4. The active pixel sensor of claim 1 wherein the photodetector is a photodiode.

5. An active pixel sensor comprising:

at least one pixel comprising a photodetector;

a sample and hold element electrically connected to the pixel and operating to store a signal level on the photodetector during a signal readout operation;

an adjusted saturated voltage source, comprising a node that provides an adjusted saturation voltage; and

a comparator having a first input node operatively connected to the sample and hold element, a second input node electrically connected to the adjusted saturation voltage node, and an output node;

a latch electrically connected to the comparator output node, said latch operating to store a saturation flag in response to the adjusted saturation voltage exceeding the signal level;

a select transistor operatively connected to the output node of the latch operating to enable readout of the saturation flag during a readout operation for the pixel;

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19 a differencing element electrically connected to the
20 pixel and operating to produce a difference level from the
21 signal level and a reset level output from the pixel during
22 the pixel readout operation;

23 an analog-to-digital converter for converting the
24 difference level into a difference digital value; and

25 a digital output selector comprising

26 a detector operatively connected to the latch output
27 node,

28 an input node electrically connected to the analog-to-
29 digital converter and an output node, and

30 a switch operating to switch the difference digital value
31 on the output node to a maximum digital value in response to
32 the detector detecting a saturation flag.

1 6. The active pixel sensor of claim 5, further comprising a
2 plurality of pixels arranged in rows and columns.

1 7. The active pixel sensor of claim 6, wherein each column
2 includes an analog-to-digital converter for converting the
3 difference level into the difference digital value.

1 8. The active pixel sensor of claim 7, wherein the
2 comparator is part of the analog-to-digital converter.

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1 9. A method for flagging an oversaturated pixel in an active
2 pixel sensor array, the method comprising:
3 reading a signal voltage from a pixel;
4 comparing the signal voltage to an adjusted saturation
5 voltage; and
6 storing a saturation flag in response to the adjusted
7 saturation voltage exceeding the signal voltage.

1 10. The method of claim 9 further comprising:
2 reading a reset voltage from the pixel;
3 calculating a digitized value for said pixel from the
4 reset voltage and the signal voltage;
5 determining whether the pixel has an associated
6 saturation flag;
7 replacing said digitized value with a maximum digital
8 value in response to the pixel having an associated saturation
9 flag.